REMARKS

I. Introduction

Claims 28 to 42 are currently pending. Claims 28 to 30 and 32 have been amended. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Amendments to the Claims

The amendments to the claims were not necessitated by the prior art rejections to the claims and the arguments presented below apply with equal force to the claims as originally presented. Accordingly, to the extent the Examiner finds Applicants' arguments persuasive, a subsequent prior art rejection of the claims, if any, should not be made final.

III. Rejection of Claim 28 Under 35 U.S.C. § 103(a)

Claim 28 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 6,088,788 ("Borkenhagen et al.") and U.S. Patent No. 7,035,997 ("Musoll et al."). It is respectfully submitted that the combination of Borkenhagen et al. and Musoll et al. does not render unpatentable claim 28 for at least the following reasons.

As an initial matter, with respect to the portion of Musoll et al. relied upon by the Examiner in this rejection, *i.e.*, column 6, lines 28 to 34, Musoll et al. do not constitute prior art with respect to the present application. The present application is a continuation of U.S. Patent Application Serial No. 09/223,219, which was filed on *December 30, 1998*. Musoll et al. was filed *July 14, 2000*, and is a continuation-in-part (CIP) of U.S. Patent Application Serial No. 09/595,776, filed on Jun. 16, 2000, which is a CIP of U.S. Patent Application Serial No. 09/312,302, filed on May 14, 1999, which is a CIP of U.S. Patent No. 6,389,449, filed on March 22, 1999, which is a CIP of U.S. Patent No. 6,292,888, filed on January 27, 1999, which is a CIP of U.S. Patent No. 6,477,562 ("Nemirovsky et al."), filed Dec. 16, 1998, all of the dates of which, besides for the last, are after Applicants' filing date of December 30, 1998. However, the subject matter of the relied upon section of Musoll et al. is not disclosed in Nemirovsky et al. As such, the effective filing date of Musoll et al., at least with respect to the relied upon section of Musoll et al., is after Applicants' filing date of December 30, 1998. Thus, with respect to the relied upon section of Musoll et al., Musoll et al. are not prior art to the present application. Accordingly, the combination of Borkenhagen et al. and Musoll et al. do not render unpatentable claim 28.

Furthermore, to reject a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish *prima facie* obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claim 28 relates to an instruction pipeline in a microprocessor and recites, *inter alia*, the following:

> ... *at least one of the plurality of pipeline units is configured to: receive an instruction from another of the pipeline unit; ... issue the received instruction to a downstream pipeline unit; ... store a copy of the received instruction; and subsequent to the issuing of the received instruction, issue to the downstream pipeline unit the copy of the received instruction after a stall occurs in the one of the multiple threads.*

Missing from the Examiner's discourse regarding "flushing instructions," which is apparently intended to address the features of a pipeline unit configured to issue a received instruction, store a copy of the received instruction, and issue the copy of the received instruction, is any discussion that actually addresses these features. The Examiner has not indicated where the relied upon references disclose or suggest these features. Indeed, it is respectfully submitted that the combination of Borkenhagen et al. and Musoll et al. does not disclose or suggest these features.

Since the combination of Borkenhagen et al. and Musoll et al. does not disclose or suggest all of the features recited in claim 28, for this additional reason, it is respectfully submitted that the combination of Borkenhagen et al. and Musoll et al. does not render unpatentable claim 28.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

IV. Rejection of Claims 29 to 36, and 38 to 42 Under 35 U.S.C. § 103(a)

Claims 29 to 36, and 38 to 42 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Borkenhagen et al., Musoll et al., and U.S. Patent No. 5,907,702 ("Flynn et al."). It is respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable any of claims 29 to 36, and 3

Claim 29 (which has been amended for clarity) recites, *inter alia*, the following:

> *... an instruction queue, wherein: in a first operating mode, the instruction queue is configured to, for each of the series of instructions, responsive to receipt of the instruction, pass the instruction from the at least one upstream pipeline unit to the at least one downstream pipeline unit ... and store a copy of the instruction, ... and in a second operating mode the instruction queue is configured to issue to the at least one downstream pipeline unit at least one of the copies on the one of the plurality of instruction threads on which a corresponding at least one of the series of instructions was previously issued.*

The Examiner asserts that Figure 2, queues 10 and 14 of Flynn et al. disclose an instruction queue configured to pass an instruction from an upstream pipeline unit to a downstream pipeline unit and to store the instruction. *See* Office Action, paragraph 8. However, claim 29 recites passing *__the instruction__* and storing a *__copy of the instruction__*. As set forth in Applicants' Response dated October 30, 2006, the queues 10 and 14 store each received instruction and then pass on each of the *stored* instructions. Further, once the stored instruction is passed, it is not indicated in Flynn et al. that the passed stored instruction is maintained so that it can be passed again to a downstream unit.

Furthermore, as set forth in Applicants' Response dated October 30, 2006, the queues 10 and 14 transmit instructions in a single manner, *i.e.*, they receive an instruction, store it in a queue, and transmit the queued instruction on to a downstream unit. They do not issue *__a received instruction__* and also *__a copy of the same received instruction__*, as provided for in the context of claim 29.

Thus, even if the combination of Borkenhagen et al., Musoll et al., and Flynn et al. suggest a queue that receives an instruction, stores a copy of the instruction, transmits the copy to the downstream unit, receives another copy of the previously received instruction, and repeats the storing and transmitting steps with respect to the second copy (which Applicants do not concede), the combination of Borkenhagen et al., Musoll et al., and Flynn et al. still does not disclose or suggest the instruction queue of claim 29, which is

configured to, responsive to receipt of an instruction, pass the received instruction and store a copy of the received instruction, and which is further configured to issue the stored copy. Instead, at most, it might be argued that the combination of the combination of Borkenhagen et al., Musoll et al., and Flynn et al. refers to storing a copy of a first received instruction and a copy of a second received instruction that corresponds to the first received instruction, e.g., where two different copies of the same instruction are received from an upstream unit, and transmitting to a downstream unit each of the stored copies.

Accordingly, the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not disclose or suggest all of the features recited in claim 29. It is therefore respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable claim 29.

Claim 32 (which has been amended for clarity) recites, *inter alia*, the following:

> . . . *storing a copy of the issued original instruction in a queue; and passing the issued original instruction to a downstream unit on the one of the plurality of instruction threads; . . . and after detecting the stall, issuing at least one of the copies from the queue, on the one of the plurality of instruction threads on which the instructions were issued.*

As set forth above in support of the patentability of claim 29, the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not disclose or suggest these features. Since the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not disclose or suggest all of the features recited in claim 32, it is therefore respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable claim 32.

Claim 36 recites, *inter alia*, the following:

> . . . *an instruction queue configured to receive the instruction from the upstream pipeline unit, pass the received instruction to a downstream pipeline unit on the selected one of the plurality of threads, and store a copy of the received instruction, the instruction queue further configured to transmit, on the selected one of the plurality of threads, the copy of the received instruction in an event of a downstream stall on the selected one of the plurality of threads.*

As set forth above in support of the patentability of claim 29, the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not disclose or suggest these features. Since the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not disclose or suggest all of the features recited in claim 36, it is therefore respectfully submitted

that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable claim 36.

Claims 30 and 31 depend from claim 29 and therefore include all of the features recited in claim 29. It is therefore respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable these dependent claims for the same reasons set forth above in support of the patentability of claim 29. *In re Fine, supra* (any dependent claim that depends from a non-obvious independent claim is non-obvious).

Furthermore, with respect to claim 30, which recites "the instruction queue in the first operating mode is configured to alternate passing the series of instructions on the one of the plurality of instruction threads on which each of the series of instructions were issued when a stall signal is not present on any of the plurality of instruction threads," the Examiner asserts that Flynn et al., column 1, lines 49-50 discloses switching of threads *__when a long-latency event occurs__*, alternating between active and dormant threads. *See* Office Action, paragraph 11. As set forth in Applicants' Response dated October 30, 2006, the cited section therefore refers to switching threads only when there is a stall and thus refers to the opposite of the subject matter of claim 30, *i.e.*, the opposite of alternating threads *__when a stall signal is not present__*.

Furthermore, with respect to claim 30, which recites a stall signal, as set forth in Applicants' Response dated October 30, 2006, while the section of Flynn et al. cited by the Examiner may refer to a long-latency event, it does not disclose or suggest a stall *__signal__*.

For these additional reasons, it is respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not disclose or suggest all of the features recited in claim 30, so that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable claim 30.

Claims 33 to 35 depend from claim 32 and therefore include all of the features recited in claim 32. It is therefore respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable these dependent claims for the same reasons set forth above in support of the patentability of claim 32. *In re Fine, supra.*

Claims 38 to 42 depend from claim 36 and therefore include all of the features recited in claim 36. It is therefore respectfully submitted that the combination of Borkenhagen et al., Musoll et al., and Flynn et al. does not render unpatentable these

dependent claims for the same reasons set forth above in support of the patentability of claim 36. *Id.*

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

V.   Rejection of Claim 37 Under 35 U.S.C. § 103(a)

Claim 37 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Borkenhagen et al., Musoll et al., Flynn et al., and U.S. Patent No. 5,381,533 ("Peleg et al."). It is respectfully submitted that the combination of Borkenhagen et al., Musoll et al., Flynn et al., and Peleg et al. does not render unpatentable claim 37 for at least the following reasons.

Claim 37 depends from claim 36 and therefore includes all of the features recited in claim 36. Since Peleg et al. do not cure the deficiencies noted above with respect to the combination of Borkenhagen et al., Musoll et al., and Flynn et al., it is therefore respectfully submitted that the combination of Borkenhagen et al., Musoll et al., Flynn et al., and Peleg et al. does not render unpatentable this dependent claim for the same reasons set forth above in support of the patentability of claim 36. *Id.*

Withdrawal of this rejection is therefore respectfully requested.

VI. ·   Conclusion

In light of the foregoing, it is respectfully submitted that all of the presently pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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